1.   A method for converting a signal to differing sample rates,

comprising:

receiving, at a first sample rate, a plurality of data points, associated

with a first signal;

operating on said plurality of data points to associate said signal with a

predetermined set of parameters, with said set of parameters including a first

transition band having an image corresponding thereto; and

varying said sample rate associated with said first signal by

interpolation with an interpolator having associated therewith a second transition

band, with the width associated with said second transition band being a function of

a spectral separation of said first transition band and said image, wherein a second

signal is produced having a sequence of data samples approximating the first signal.

2.   The method recited in claim 1 wherein varying said sample rate

includes producing each data sample associated with said second signal by

convolving a predetermined finite number N of data points with an equal number of

coefficients, with N being greater than two.

3.   The method recited in claim 2 wherein coefficients vary as a

function of the temporal spacing between the output point and the corresponding

input points.

4.   The method as recited in claim 1 wherein varying said sample

rate increases said sample rate.

1   5.   The method as recited in claim 1 wherein varying said sample

2 rate decreases said sample rate.

1   6.   The method as recited in claim 1 wherein operating on said

2 plurality of data points includes up-sampling said plurality of data points by a factor

3 of two.

1   7.   The method as recited in claim 1 wherein operating on said

2 plurality of data points includes filtering said plurality of data points with a half-

3 band filter.

1   8.   The method as recited in claim 1 wherein operating on said

2 plurality of data points includes decimating said plurality of data points with a half-

3 band decimator.

1   9.   The method as recited in claim 6 further including decimating a

2 plurality of data points output by said interpolator with a half-band decimator, with

3 varying said sample rate occurring after receiving said plurality of data points and

4 before decimating said plurality of data points.

1   10.   The method as recited in claim 1 wherein operating on said

2 plurality of data points to associate said signal includes filtering the same with a

3 finite impulse response filter.

1   11.   The method as recited in claim 1 wherein operating on said

2 plurality of data points to associate said signal includes filtering the same with an

3 infinite impulse response filter.

1   12.   A method for converting a digital audio signal to a different

2   sample rate, comprising:

3   receiving a plurality of data points, associated with an audio signal, at

4   an initial sample rate;

5   halfband filtering said plurality of data points with a halfband filter;

6   and

7   interpolating with an interpolator having independently

8   programmable parameters.

1   13.   The method as recited in claim 12 wherein:

2   said halfband filtering is done in conjunction with upsampling said

3   plurality of data points; and

4   said interpolating follows said upsampling and halfband filtering.

1   14.   The method as recited in claim 12 wherein:

2   said halfband filtering is done, without upsampling, on said plurality

3   of datapoints; and

4   said interpolating follows said halfband filtering.

1   15.   The method as recited in claim 12 wherein:

2   said halfband filtering follows said interpolating.

1   16.   The method as recited in claim 12 wherein:

2   said halfband filtering is done in conjunction with upsampling said

3   plurality of data points;

4   said interpolating follows said halfband filtering; and

5   halfband filtering and decimating following said interpolating.

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1   17.   A computer program product for converting signals to differing

2   sample rates comprising:

3   code for receiving a plurality of data points, associated with a signal, at

4   a first sample rate;

5   code for operating on said plurality of data points to associate said

6   signal with a predetermined set of parameters, with said set of parameters including

7   a first transition band having a first width;

8   code for varying said sample rate associated with said first signal by

9   interpolating a subset of data points of said plurality of data points with an

10   interpolator having associated therewith a second transition band, with the width

11   associated with said second transition band being a function of a spectral separation

12   of said first transition band and said image, wherein a second signal is produced

13   having a sequence of data samples approximating the first signal; and

14   a computer-readable storage medium for storing code.

1   18.   The computer program product as recited in claim 17 wherein

2   code for operating on said plurality of data points includes code for up-sampling

3   said plurality of data points by a factor of two.

1   19.   The computer program product as recited in claim 17 wherein

2   code for operating on said plurality of data points includes code for filtering said

3   plurality of data points with a half-band filter.

1 20. The computer program product as recited in claim 17 wherein

2 code for operating on said plurality of data points includes code for decimating said

3 plurality of data points with a half-band decimator.

1 21. The computer program product as recited in claim 18 further

2 including code for decimating said plurality of data points with a half-band

3 decimator.

1 22. The computer program product as recited in claim 17 wherein

2 code for operating on said plurality of data points to associate said signal includes

3 code for filtering said data points with a filter selected from the set of filters

4 consisting essentially of a finite impulse response filter and a infinite impulse

5 response filter.

1 23. A computer program product for converting a digital audio

2 signal to a different sample rate, comprising:

3 a computer-readable storage medium for storing code, said code

4 including

5 code for receiving a plurality of data points, associated with an audio

6 signal, at an initial sample rate;

7 code for halfband filtering said plurality of data points with a halfband

8 filter; and

9 code for interpolating with an interpolator having independently

10 programmable parameters.

24. The computer program product as recited in claim 23 wherein:

said code for halfband filtering is executable in conjunction with code

for upsampling said plurality of data points; and

said code for interpolating is executable following said upsampling

and halfband filtering code.

25. The computer program product as recited in claim 23 wherein:

said code for halfband filtering is executable, without upsampling

code, on said plurality of datapoints; and

said code for interpolating is executable following said halfband

filtering code.

26. The computer program product as recited in claim 23 wherein:

said code for halfband filtering is executable following said code for

interpolating.

27. The computer program product as recited in claim 23 wherein:

said code for halfband filtering is executable in conjunction with code

for upsampling said plurality of data points;

said code for interpolating is executable following said code for

halfband filtering; and further comprising:

code for halfband filtering and decimating executable following said

code for interpolating.

28. The method of claims 1 or 12 wherein said interpolator is an FIR

Nth order sum of products interpolator with linear interpolation of coefficients.

1   29.   The computer program product of claims 17 or 23 wherein said

2 interpolator is an FIR Nth order sum of products interpolator with linear

3 interpolation of coefficients.

1   30.   The method of claims 1 or 12 wherein said interpolator has a

2 transition band beginning adjacent the top of a passband and ending adjacent the

3 bottom of a passband image.

1   31.   The computer program product of claims 17 or 23 wherein said

2 interpolator has a transition band beginning adjacent the top of a passband and

3 ending adjacent the bottom of a passband image.

1   32.   The method of claims 7, 8, 9 or 12 wherein said halfband filter is

2 an IIR filter composed of first order allpass blocks.

1   33.   The computer program product of claims 19 or 23 wherein said

2 halfband filter is an IIR filter composed of first order allpass blocks.

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